a- d'après la loi des Mailles :

$$u_{AB} + u_R = 0 \Rightarrow u_{AB} + Ri = 0$$

$$\Rightarrow u_{AB} + RC\frac{du_{AB}}{dt} = 0$$

$$\Rightarrow \frac{du_{AB}}{dt} + \frac{1}{RC}u_{AB} = 0$$

$$u_{AB}(t) = k.e^{-\alpha t}$$

À $t = 0$ s' $\quad u_{AB}(0) = K = E$

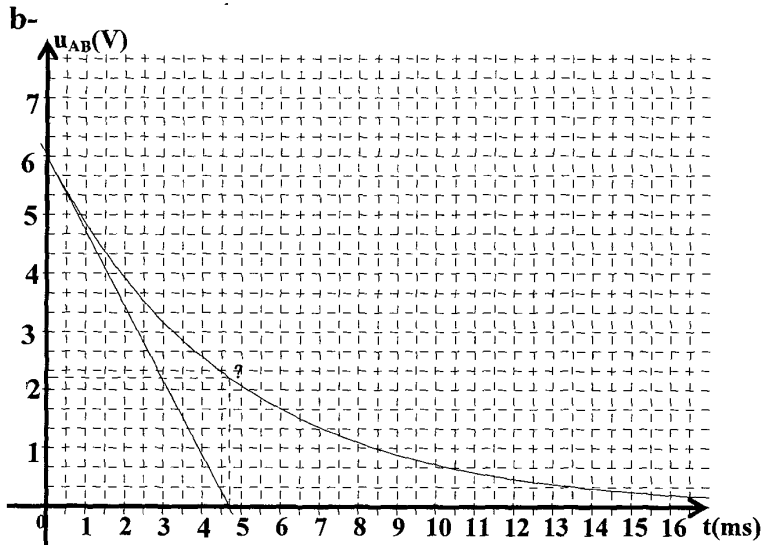
On remplace dans l'équation :

$$-Ke^{-\alpha t} + \frac{K}{RC}e^{-\alpha t} = 0 \Rightarrow \quad Ke^{-\alpha t}(\frac{1}{RC} - \alpha) = 0$$

$$\Rightarrow \frac{1}{RC} - \alpha = 0 \Rightarrow \quad \alpha = \frac{1}{RC}$$

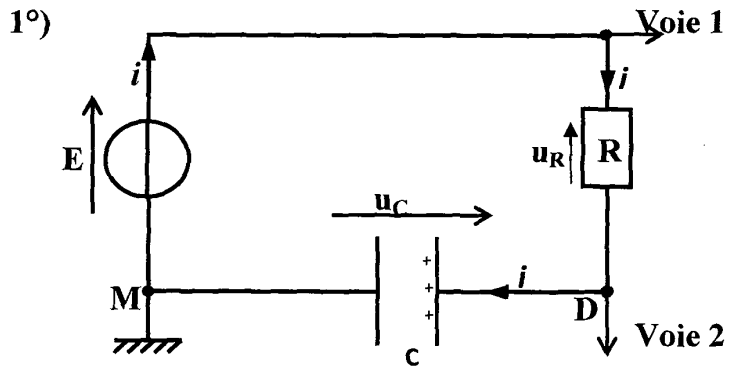
d'où $u_{AB}(t) = E.e^{-\frac{t}{RC}}$

b-



Exercice N° 9 :

1°)



Voie 1 : $U_G = E$

Voie 2 : u_C